

Claims

1. A system for the optical analysis of targets comprising:

- an illumination source producing an illumination beam;

- a stage for holding a sample onto which said illumination beam is directed;

- a first objective lens collecting light from said sample and transmitting said light as a collected light beam;

- a first imaging lens that receives collected light from said objective lens and focuses said collected light;

- a first area array detector positioned to detect collected light focused by said first imaging lens;

- a second objective lens collecting light from said sample and transmitting said light as a collected light beam;

- a second imaging lens that receives collected light from said objective lens and focuses said collected light;

- a second area array detector positioned to detect collected light focused by said first imaging lens;

- a processor that simultaneously integrates a signals from said first and said second detector, wherein said processor integrates a signal from a first detector for a first time interval and said processor integrates a signal from said processor for a second time interval, wherein said first time interval is shorter than said second time interval.

2. The system of claim 1, wherein said first area array detector and said second area array detector are selected from a group comprising CCD detectors, CID detectors, CMOS detectors, and photodiode array detectors.

3. The system of claim 1, wherein said illumination source is an arc lamp.
4. The system of claim 3, wherein the illumination beam is directed by an optical fiber onto the sample.
5. The system of claim 1, further comprising an illumination filter placed in the path of the illumination light.
6. The system of claim 5, further comprising an illumination filter holder that allows one of a plurality of illumination filters to be positioned in the path of the illumination light.
7. The system of claim 1, wherein the first and second area array detectors are selected from the group consisting of a CCD detector, a CID detector, a CMOS detector or a photodiode array detector.
8. The system of claim 1, wherein said sample holding stage may be selectively moved along a z-axis.
9. The system of claim 1, further including an autofocus system.
10. The system of claim 9, wherein said autofocus system includes a laser directed onto a reflective substrate on the sample holding stage, an array detector positioned to detect the reflected light, and a processor, wherein said processor determines the focus on the substrate by the location on the array detector to which reflected light is detected.
11. The system of claim 1, wherein said stage includes an adapter held on said stage.